

5112.APP
SEQUENCE LISTING

<110> NELSON, DAVID R.

<120> A LIVE, AVIRULENT STRAIN OF V. ANGUILLARUM THAT
PROTECTS FISH AGAINST INFECTION BY VIRULENT V.
ANGUILLARUM

<130> 5112

<140> 09/915,706

<141> 2001-07-26

<160> 4

<170> PatentIn Ver. 2.1

<210> 1

<211> 3588

<212> DNA

<213> Vibrio anguillarum

<220>

<221> modified_base

<222> (3572)

<223> a, t, c, g, other or unknown

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<211> 463

<212> PRT

<213> *Vibrio anguillarum*

<400> 2

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			20					25					30		

Arg	Pro	Leu	Arg	Asn	Glu	Phe	Asn	Val	Ala	Gln	Thr	Ala	Leu	Arg	Lys
		35					40					45			

Leu	Ser	Gln	Asn	Pro	Ser	Ala	Asp	Glu	Arg	Asp	Ala	Leu	Gln	Glu	Ala
		50				55					60				

Cys	Leu	Asn	Lys	Trp	Lys	Ile	Leu	Ser	Asp	Ser	Leu	Tyr	Glu	Gln	Phe
65					70					75					80

Ser	Lys	Thr	Thr	Arg	Asp	Ile	Glu	Leu	Ile	Ser	Trp	Phe	Val	Ala	Ala
				85					90					95	

Gln	Phe	Leu	Leu	Asp	Thr	Thr	Leu	Glu	Ser	Ala	Ala	Asn	Ser	Leu	Glu
		100						105					110		

Trp	Leu	Ala	Asp	Leu	Ser	Glu	Lys	His	Trp	Asp	His	Leu	Asn	Pro	Val
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Leu	Pro	Val	Glu	Thr	Leu	Lys	Ser	Asp	Asp	Asp	Lys	Gly	Lys	Glu	Arg
	130					135					140				

Glu	Gln	Ala	Asp	Ala	Lys	Val	Lys	Ala	Phe	Phe	Gln	Leu	Val	Gly	Asp
145					150					155					160

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Ser Glu Glu Ser Ser Ile Leu Tyr Ala Pro Val Leu Gln Leu Pro Leu
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Val Gly Glu Val Thr Phe Phe Asp Phe Gln Ser Ala Glu Arg Lys Gly
180 185 190

Glu Ile Ser Gln Leu Lys Ser Met Leu Thr Thr Thr Val Ala Gln Glu
195 200 205

Arg Phe Ala Ile Gln Phe Lys Met Glu Asn Ala Lys Arg Cys Val Thr
210 215 220

Gln Leu Asp Arg Leu Ser Ala Leu Val Ser Thr Lys Cys His Ser Leu
225 230 235 240

Gly Ser Gln Ser Thr Asn Phe Gly Phe Ala Lys Ser Leu Leu Thr Arg
245 250 255

Val Glu Asn Ala Leu Val His Leu Ser Gly Ile Lys Leu Ala Pro Lys
260 265 270

Ala Glu Ala Lys Thr Val Glu Gln Glu Val Ala Glu Ser Ser Val Ser
275 280 285

Glu Gly Glu Leu Pro Ser His Met Asp Thr Lys His Ile Glu Arg Ile
290 295 300

Pro Met Ala Ser Glu Gln Ala Gln Thr Val Ser Gln His Leu His Ala
305 310 315 320

Gly Asn Leu Ser Glu Leu Gly Asn Leu Asn Met Asn Arg Asp Leu
325 330 335

Ala Phe His Leu Leu Arg Glu Val Ser Asp Tyr Phe Arg Gln Ser Glu
340 345 350

Pro His Ser Pro Ile Ser Phe Leu Leu Glu Lys Ala Ile Arg Trp Gly
355 360 365

Tyr Leu Ser Leu Pro Glu Leu Leu Arg Glu Met Met Ser Glu Gln Asn
370 375 380

Gly Asp Ala Leu Ser Thr Ile Phe Asn Ala Ala Gly Leu Asn His Leu
385 390 395 400

Asp Gln Val Leu Leu Pro Glu Val Ser Thr Pro Thr Val Gly Ile Glu
405 410 415

Ser Pro Gln Thr Pro Gln Ala Lys Pro Ser Val Ser Asp Pro Arg Ser
420 425 430

Val Glu Glu His Val Ser Gln Thr Ser Pro Val Asp Thr Gln Ser Lys
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Gln Asp Gln Lys Pro Gln Ser Ser Ala Thr Ser Ala Leu Ser Trp
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<210> 3
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<212> PRT
<213> *Vibrio anguillarum*

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 35 40 45
 Asp Ile Gly Asn Gly Thr Asn Ala Asp Ser Gly Met Val Gly Val Ser
 50 55 60
 Glu Val Ser Val Thr Lys Glu Val Asp Gly Ala Ser Glu Asp Leu Leu
 65 70 75 80
 Ser Tyr Leu Phe Asn Pro Gly Lys Asp Gly Lys Thr Val Glu Val Ala
 85 90 95
 Phe Thr Lys Pro Ser Asn Asp Gly Gln Gly Ala Asp Val Tyr Phe Gln
 100 105 110
 Val Lys Leu Glu Lys Ala Arg Leu Val Ser Tyr Asn Val Ser Gly Thr
 115 120 125
 Asp Gly Ser Gln Pro Tyr Glu Ser Leu Ser Leu Ser Tyr Thr Ser Ile
 130 135 140
 Ser Gln Lys His His Tyr Glu Lys Glu Gly Gly Glu Leu Gln Ser Gly
 145 150 155 160
 Gly Val Val Thr Tyr Asp Leu Pro Thr Gly Lys Met Thr Ser Gly Lys
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<210> 4

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<212> PRT

<213> *Vibrio anguillarum*

<220>

<221> MOD_RES

<222> (113)

<223> Variable amino acid

<400> 4

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 Pro Phe Val Val Gly Val Ile Gly Asp Phe Ser Gly His Lys Pro Glu
 35 40 45
 Ser Glu Lys Val Asp Leu Glu Glu Arg Glu Phe Thr Gly Ile Asp Lys
 50 55 60
 Asp Asn Phe Asp Thr Val Met Gly Gln Ile His Pro Arg Leu Ser Tyr
 65 70 75 80
 Lys Val Asp Asn Lys Leu Ala Asn Asp Asp Ser Gln Phe Glu Val Asn
 85 90 95

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Leu Ser Leu Arg Ser Met Lys Asp Phe His Pro Glu Asn Leu Val Asp
 100 105 110

Xaa Ile Glu Pro Leu
 115